

A REVIEW OF THE SPECIES OF *SYNERGUS* FROM GUATEMALA,
WITH NOTES ON *CYNIPS GUATEMALENSIS* CAMERON
(HYMENOPTERA: CYNIPIDAE)

A. J. RITCHIE AND J. D. SHORHOUSE

(AJR) Department of Biology, Carleton University, Ottawa, Ontario (Current address: 47 Deepwood Drive, Hamden, Connecticut 06417); (JDS) Department of Biology, Laurentian University, Sudbury, Ontario P3E 2C6, Canada.

Abstract.—Three new species of *Synergus* Hartig (Hymenoptera: Cynipidae) from Guatemala are described and *Synergus filicornis* Cameron is redescribed. A key to *S. cultratus* new species, *S. kinseyi* new species, *S. mesoamericanus* new species, and *S. filicornis* Cameron is presented. Biological notes, when available, are given for each species. *Cynips guatemalensis* Cameron is transferred to *Andricus* and is a senior synonym of *Andricus mexicana* Bassett, *A. mexicanus* Kinsey new synonym, and *Synergus dorsalis* Cameron new synonym. The nomenclature for *Synergus dorsalis* Cameron and *S. dorsalis* (Provancher) is discussed.

During a visit to the American Museum of Natural History, one of us (AJR) discovered a series of undescribed inquiline gall wasps belonging to the genus *Synergus* Hartig (Hymenoptera: Cynipidae) from Guatemala. These species are of interest for several reasons. Guatemala is the southernmost point of the range of inquiline cynipids in the New World and is isolated from other cynipid habitats by the lowland Isthmus of Tehuantepec. Secondly, some of the most primitive oak gall wasps come from Guatemala and southern Mexico. Finally, two of the three new species are extremely large for inquiline Cynipidae.

Very little is known about the gall wasps of Guatemala. Cameron (1883) described the woody oak-stem galls of *Cynips championi* and *C. imitator* and the oak-leaf galls of *C. guatemalensis*. Cameron described also two species of *Synergus* from Guatemala: *S. filicornis* from an unknown gall, and *S. dorsalis* from galls of *C. guatemalensis*.

Kinsey (1920) cut insects from galls that he considered to be made by *C. guatemalensis*. Kinsey (1936) later described *Acraspis fuigiensis*, *Atrusca lucaris*, and *Atrusca luminaris*, all of which form leaf galls on oaks. Weld (1913) described *Synergus furnessana* from Mexico but Weld (1930) later decided that this was synonymous with *S. filicornis* Cameron. The only other inquiline known from Mexico is *S. dugesi* Ashmead (holotype in USNM; examined), which has been reared from galls of *Andricus championi* (Cameron).

Kinsey made important contributions to our knowledge of the taxonomy and biology of gall wasps. Although his taxonomic concepts and nomenclature were radical and have not been followed since, his collection of Cynipidae, now in the American Museum of Natural History, is one of the most important in the world. He was an avid collector, and some estimates of the size of his collection reach 5 million specimens (Weld,

1952). Kinsey never described or reported any of the inquiline or parasites that he reared from galls. He exhaustively labelled them with locality, collection and emergence dates, host plant and host gall, but curated them under the name of the host gall inducer. Unfortunately, he assigned manuscript names to many species of gall inducer which he never described. This is apparently the case with the Guatemalan gall wasps, as two of the four galls from which he reared inquilines cannot be positively identified; one (*brelandi*) is a Kinsey manuscript name (Weld, 1952), and the other (*ruginos.*) is abbreviated. Tentative host identifications are discussed in the remarks for *S. cultratus*. Collection dates were given in the following form, "month.day.year," and the symbol \oplus was used to indicate the collection date of the gall and "inq." for the date of emergence for an inquiline. Kinsey usually put a number and letter after the locality; these indicate the number of miles and direction from the nearest town (i.e. Sacapulus 9S means 9 miles south of Sacapulus). This has been followed in the present paper.

Morphological terms are those of Ritchie and Peters (1981) and Shorthouse and Ritchie (1984), with the following exceptions: supracoxal carina = carina on propodeum running from metacoxal socket dorsally to anterior of the flap over propodeal spiracle; metanotal median fovea = the small median fovea posterior and between the lateral foveae, and above the area between the propodeal carinae.

The majority of specimens examined in this study, including the holotypes of the new species, are deposited in the American Museum of Natural History, New York, New York (AMNH) except as noted. The holotypes of *Cynips guatemalensis* Cameron and *Synergus dorsalis* Cameron are deposited in the British Museum (Natural History) (BMNH), the holotype of *Ceroptres dorsalis* Provancher is in the Public

Museum of Quebec, Quebec City, Quebec (PMQ), and the holotype of *Synergus furnessana* Weld is in the Philadelphia Academy of Natural Sciences, Philadelphia, Pennsylvania (PANS). Kinsey collected all specimens and made all host-gall determinations except as noted. All Kinsey material was collected from galls on *Quercus pili-caulis*. Representative specimens of the four Guatemalan species of *Synergus* have been retained by both authors.

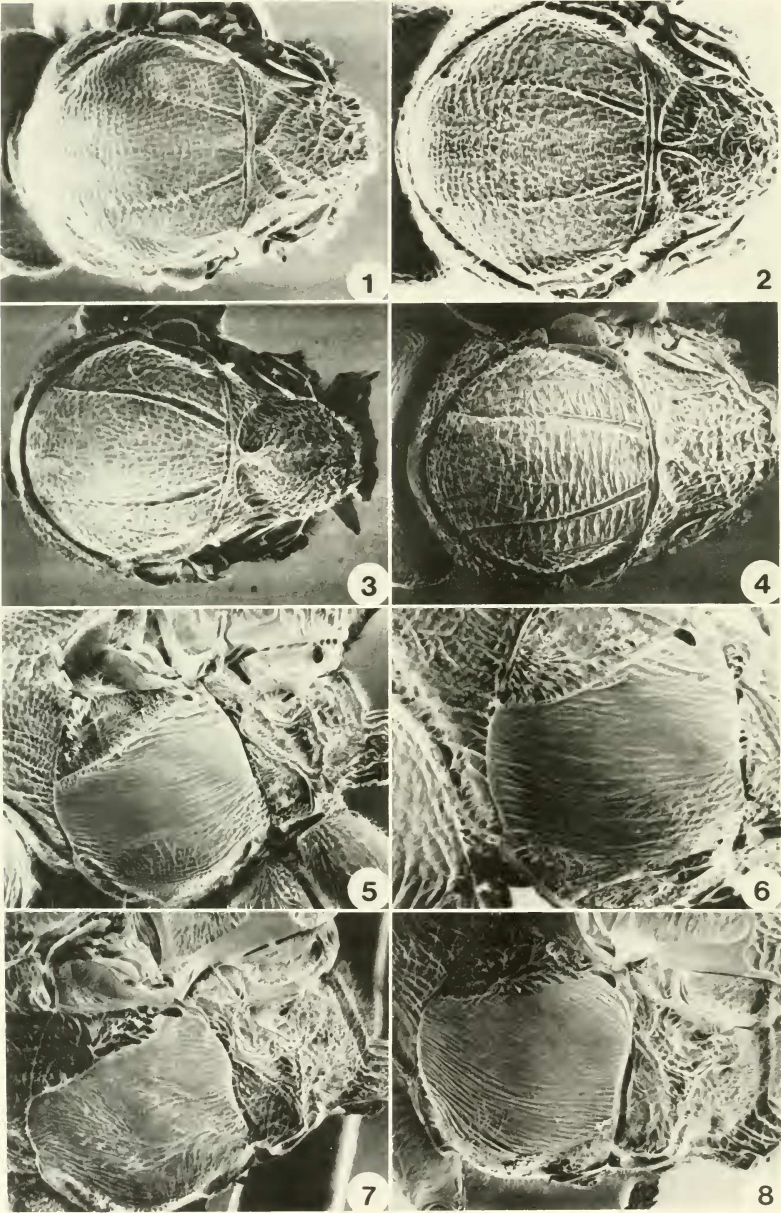
KEY TO THE SPECIES OF *SYNERGUS* FROM GUATEMALA

1. Female metasomal tergite 2+3 (T2+3) deeply excavated along posterodorsal margin, posterior third sparsely and weakly punctate (Figs. 9, 10); meso- and metasoma black and white, black and yellow, or entirely yellow 2
- Female T2+3 at most weakly excavated along posterodorsal margin, posterior third entirely smooth (Figs. 11, 12); mesosoma entirely black, metasoma black and rufous 3
2. Crossvein r-m in hind wing recurved (Fig. 17); radial sector (Rs) 1 and Rs2 nearly parallel (Fig. 19); third male antennomere (A3) elongated beyond notch (Fig. 13); mesopleuron entirely yellow above coxal bases
..... *cultratus* Ritchie and Shorthouse, n. sp.
- Crossvein r-m in hind wing normal (as in Fig. 18); Rs1 and Rs2 divergent (Fig. 20); male A3 not elongated beyond notch (Fig. 14); mesopleuron with some black above coxal bases
..... *flicornis* Cameron
3. Female with 15 antennomeres; radial cell length 3.0 times width; Rs2 straight (at most weakly bent distally); areolet absent or elongate (Fig. 21); usually over 5.0 mm long
..... *kinseyi* Ritchie and Shorthouse, n. sp.
- Female with 14 antennomeres; radial cell length usually 2.0 times width; Rs2 distinctly bent; areolet equilateral (Fig. 22); under 4.1 mm ..
..... *mesoamericanus* Ritchie and Shorthouse, n. sp.

Synergus cultratus Ritchie and Shorthouse, NEW SPECIES

Figs. 1, 5, 9, 13, 17, 19

Female (holotype).—Length 7.0 mm. Yellow; tip of mandible, frons above antennal socket and between frontal ridges, median third of vertex and occiput, pronotal



plate, scutum between anterior lines, mesopleuron between coxal sockets, anterodorsal margin of T2+3, posterodorsal margin of T7 black; distal half of mandible except tip, A1–A7, tarsal claw, T1, posterodorsal margin of T2+3, exposed dorsal margins of T4–T6 piceous brown. Head slightly narrower than thorax (slightly wider in all other species); malar space 0.56 of eye height; frontal ridge weak, reaching ectal margin of posterior ocellus; LOL = 0.8D, POL = 1.4D, OOL = 1.4D; antenna with 14 antennomeres, 5.29 mm long; A1–A14 (mm): 0.33, 0.17, 0.56, 0.57, 0.58, 0.56, 0.46, 0.40, 0.35, 0.29, 0.25, 0.25, 0.21, 0.31. Mesoscutum (Fig. 1) transversely rugulose, punctate between anterior lines; notauli percurrent, irregularly interrupted by transverse rugulae; median groove represented by weak crease extending about one third of mesoscutum; anterior lines slightly divergent, extending about one fourth of mesoscutum. Mesoscutellum (Fig. 1) rugose, rugosity stronger posteriorly, median depression absent; upturned posterior carina strong, complete; fovea large, shallow, rugulose. Mesopleuron (Fig. 5) entirely striate. Metanotal median fovea with longitudinal carina. Propodeum with an extra weak carina parallel to and between supracoxal carina and propodeal carina; propodeal carinae very strong, thickened, strongly coriaceous. Metasoma (Fig. 9) longer than head plus mesosoma. T2+3 covering about two thirds of metasoma (lateral view), strongly excavated along posterodorsal margin, posterior third sparsely, weakly punctate. Forewing (Fig. 19) 6.0 mm long; radial cell length 3.0 times width; Rs1 nearly parallel to Rs2 (divergent in all other species); Rs2 very weakly bent near wing margin, almost straight; areolet normal; hind wing 4.0 mm long, r-m strongly recurved

(Fig. 17) (weakly recurved in all other species; Fig. 18). Tarsal claw with distinct tooth.

Male (allotype).—Differs from holotype as follows: length 4.75 mm; antenna 4.9 mm long, with 15 antennomeres, A1–A15 (mm): 0.38, 0.15, 0.50, 0.50, 0.50, 0.50, 0.42, 0.33, 0.31, 0.26, 0.23, 0.21, 0.21, 0.18, 0.22; A3 weakly bent and notched (Fig. 13), elongated beyond notch; T2+3 covering entire metasoma (dorsal view), T7 (posterior view) with setigerous punctures; forewings 5.6 mm long, hind wings 3.4 mm long.

Variation.—*Female*: Length 5.0–7.25 mm, average of 50 specimens = 6.3 mm; mesoscutum from yellow with small black area between anterior lines to black with small yellow areas at posterior ends of notauli; scutellum sometimes amber or light brown; propodeal carinae yellow or black, black area sometimes extending ectal of carinae; mediodorsal black area of metasoma sometimes expanded to occupy entire dorsal margin.

Male: Length 3.3–5.1 mm, average of 50 specimens = 4.4 mm; coloration as in female except propodeum, mesoscutum, mesoscutellum, and metapleuron sometimes entirely black.

Type material.—Holotype, ♀ (AMNH): Huehuetenango 3S, Guate[mala], 7300', ⊕ 12.22.35, inq. 8.18.37, *ex* gall of *brelandi*. Allotype, ♂: with same data as holotype. Paratypes (142 ♀, 145 ♂; AMNH): 71 ♀, 74 ♂ with same data as holotype; 13 ♀, 16 ♂ with same data as holotype but emerged 7.1–9.10.36; 20 ♀, 26 ♂ with same data as holotype but emerged 7.1–9.1.38; 13 ♀, 3 ♂ with same data as holotype but emerged 8.22–8.27.37, *ex* gall of *ruginos.*; 5 ♀, 10 ♂, Sacapulus 9S, Guate., 6000', ⊕ 12.28.35, inq. 7.3–10.22.37, *ex* gall of *brelandi*; 1 ♀,

Figs. 1–8. 1–4, Mesonota of *Synergus* spp., dorsal view. 1, *Synergus cultratus*. 2, *Synergus filicornis*. 3, *Synergus kinseyi*. 4, *Synergus mesoamericanus*. 5–8, Mesopleura of *Synergus* spp., lateral view. 5, *Synergus cultratus*. 6, *Synergus filicornis*. 7, *Synergus kinseyi*. 8, *Synergus mesoamericanus*.

1 ♂ with same data as preceding series but emerged 9.1.38; 1 ♀ with same data as preceding series but emerged 7.1.39; 2 ♀, 2 ♂, Quiche 2N, Guate., 7500', \oplus 12.27.35, inq. 8.10–9.10.37, *ex* gall of *brelandi*; 4 ♀, 2 ♂ with same data as preceding series but emerged 7.1–7.15.38; 1 ♀, Guatemala City 3W, Guate., 6300', \oplus 12.30.35, inq. 8.3.37, *ex* gall of *brelandi*; 11 ♀, 1 ♂ (Label lost), Guatemala, 1935, inq. 9.20.37, *ex* gall of *brelandi*.

Excluded from type series: 89 specimens from the above localities and emergence dates, in various but poor condition; tentatively identified as *S. cultratus*.

Etymology.—The species name is based on the Greek word for knife in reference to the strongly compressed metasoma.

Diagnosis.—*Synergus cultratus* can be distinguished easily from other Guatemalan species by the following characters: r-m in the hind wing strongly recurved; Rs1 nearly parallel to Rs2; mesopleuron entirely yellow; male A3 elongate beyond notch; and the extra carina between the supracoxal and propodeal carinae. Some specimens of this species are the largest known inquiline cynipids, being over 7.0 mm in length.

Remarks.—Host relationships for *S. cultratus* are unclear, as neither of the reported hosts on the labels can be definitely identified. One labelled host, *brelandi*, is a Kinsey manuscript name for a species of *Andricus* (Weld, 1952). The other labelled host, *ruginos.*, may be an abbreviation for *Andricus ruginosus* Bassett, which produces a hard polythalamous stem gall (Weld, 1957) or more likely, a variety of *ruginosus* (see Kinsey, 1930, 1936 for his taxonomic concepts and use of varietal names). The emergence dates for this species are also unusual, as most species of *Synergus* emerge after one or two winters in the gall (Eady and Quinlan, 1963). *Synergus cultratus* appears to have a one to four year variable life cycle, although it is possible that first year emergents were from older galls and that the life cycle is from two to four years in length.

Most individuals (65% of types) emerged after two winters in the gall.

Synergus filicornis Cameron

Figs. 2, 6, 10, 14, 20

Synergus filicornis Cameron, 1883: 71 (♀, ♂). TYPE: Holotype, ♀ (BMNH). Examined.

Synergus furnessana Weld, 1913: 134 (♀, ♂); synonymized by Weld, 1930: 143. TYPE: Holotype, + (PANS). Examined.

Female.—2.0–3.6 mm. Black and yellow: Head yellow; frons above antennal socket and between frontal ridges, ocellar area, median third of vertex, median third of occiput usually black (rarely entirely yellow); anterior of pronotum, anterior of pronotal plate piceous brown to black; posterior of pronotal plate yellow to black, remainder of pronotum yellow to amber; mesoscutum usually yellow or amber, with black or piceous brown between notauli (rarely entirely yellow or mostly piceous brown); mesoscutum usually yellow to amber, rarely dark piceous brown; mesopleuron black, frequently with median yellow area, rarely entirely yellow; metanotum and metapleuron usually black, sometimes piceous brown, rarely yellow; propodeum piceous brown to black, rarely yellow; spiracular flap almost white, always lighter than surrounding coloration; metasoma yellowish, with broad dorsal band piceous brown to black, band sometimes reduced to anterior half of T2+3; legs yellow, metatarsus amber to brown; wings hyaline, veins yellow to light brown. Head as wide or slightly wider than thorax; frons below antennal socket and beneath eye with strong radiating striae (relatively stronger than in other species), striae weaker between anterior tentorial pits; malar space about 0.54 of eye height; posteroventral margin of gena with weak short carina; frontal ridge present, moderately strong, not quite reaching posterior ocellus; LOL = 0.91D, POL = 2.0D, OOL = 1.36D; antenna with 14 antennomeres; A3–A6 relatively

thin, subsequent antennomeres stouter; relative length of antennomeres (A1–A14): 0.25, 0.10, 0.32, 0.32, 0.32, 0.29, 0.25, 0.21, 0.17, 0.15, 0.13, 0.12, 0.12, 0.20. Mesoscutum (Fig. 2) transversely rugulose; notauli percurrent, grooves sometimes interrupted by transverse rugulae, bottom of grooves weakly rugulose; median groove, lateral lines absent; anterior lines parallel, extending about one fourth of mesoscutum. Mesoscutellum (Fig. 2) rugose, median depression absent, weak posterior carina not upturned; fovea large, shallow, sometimes weakly rugulose, not well defined. Mesopleuron (Fig. 6) entirely striate, striations stronger ventrally. Metanotal median fovea broadened, broader than in other species. Propodeum with moderately weak transverse carinae between supracoxal and propodeal carinae, no extra longitudinal carina; propodeal carinae very strong, thick, strongly coriaceous. Metasoma (Fig. 10) slightly longer than head plus mesosoma; T2+3 covering about two thirds of metasoma, posterior third punctate, posterodorsal margin deeply excavated; T4–T7 exposed along posterodorsal margin, more densely punctate than T2+3. Forewing (Fig. 20) about 1.0–1.1 length of body; radial cell length 3.0 times width; Rs2 very weakly bent near wing margin, almost straight; areolet of normal shape, posterior margin very weak to missing. Tarsal claw with a distinct tooth.

Male.—Differs from female as follows: length 2.0–2.5 mm; frontal ridge sometimes complete, running to anterior margin of posterior ocellus; antenna with 15 antennomeres, about equal to body length, A3 prominently notched and bent (Fig. 14), relative lengths of antennomeres (A1–A15): 0.16, 0.08, 0.25, 0.23, 0.21, 0.20, 0.15, 0.12, 0.12, 0.11, 0.11, 0.10, 0.10, 0.09, 0.13; mesoscutum sometimes entirely black, with stronger transverse rugosity; mesopleuron sometimes entirely black, with stronger striae, propodeal carinae not as strong or as thickened, not as strongly coriaceous; metasoma sometimes entirely black; T2+3 cov-

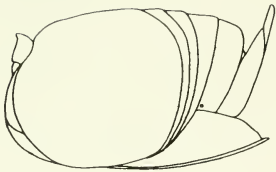
ering entire metasoma, not posterodorsally excavated; posterior third of T2+3 usually with band of punctures interrupted by posterodorsal smooth area, punctures sometimes stronger and band not interrupted.

Type material examined.—*Synergus filicornis* Cameron. Holotype, ♀ (BMNH, Type No. 7.110), labelled: "San Geronimo, Guatemala, Champion," "*Synergus filicornis*." *Synergus furnessana* Weld. Holotype, ♀ (PANS), "Michoacan, Mex.," "*Synergus furnessana*," "Holotype" (red label). Allotype, ♂ (PANS), with same data as holotype.

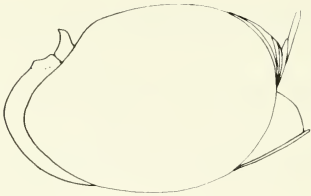
Other material examined (AMNH).—18 ♀, 1 ♂, Huehuetenango 14S, 7500', Guate., ⊕ 12.23.35, inq. 1.7–1.14.36, ex gall of *mexicanus*; 1 ♀, 1 ♂, as previous series but emerged 7.1.36; 23 ♀, 1 ♂, Sacapulus 9S, 6000', Guate., ⊕ 12.28.35, inq. 1.7–1.14.36, ex gall of *mexicanus*; 10 ♀, 1 ♂, Quiche 2N, 7500', Guate., ⊕ 12.27.35, inq. 1.7–1.22.36, ex gall of *mexicanus*; 1 ♂, Guatemala City 5W, 6500', Guate., ⊕ 12.30.35 (no emergence date), ex gall of *mexicanus*.

Diagnosis.—*Synergus filicornis* Cameron is most similar to *S. cultratus* and can be distinguished from it and other species by the following characters: under 4.0 mm; posterior third of T2+3 punctate, posterodorsal margin of female T2+3 deeply excavated; A3–A5 elongate and thin. The type of *Synergus filicornis* is in poor condition; the following structures are missing: left A2–A14, right A8–A14, and the metasoma.

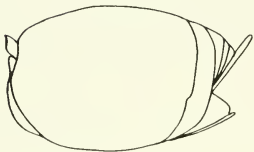
Remarks.—This species is the most variable of the Guatemalan species of *Synergus*, especially in coloration. Very small females (~2.0 mm) are almost entirely yellow and have much finer sculpture of the mesopleuron and punctures on T2+3, whereas some of the larger females have much more brown or black and have stronger sculpturing. Similarly, two of the larger males have the meso- and metasoma entirely black, very strong mesopleural striations, and have a complete band of punctations in the posterior third of T2+3. Unlike the other species, *S. filicornis* has been reared from both a leaf gall,



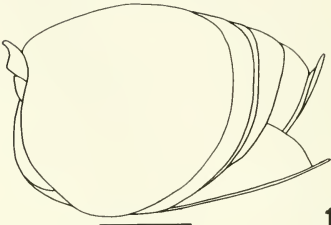
9



10



11



12



13



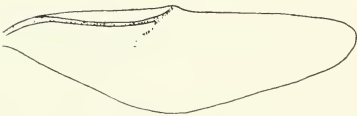
14



15



16



17



18

Andricus guatemalensis (Cameron), and a stem gall, *A. furnessana* Weld. The life cycle of this species appears to be limited to one year and the rapid emergence of some specimens may indicate that *S. filicornis* has more than one generation per year.

***Synergus kinseyi* Ritchie and Shorthouse, NEW SPECIES**

Figs. 3, 7, 11, 15, 18, 21

Female (holotype).—Length 6.25 mm. Head yellow; frons above antennal sockets median third vertex, and median third of occiput black; antenna and mandible brown. Mesosoma black, legs except metacoxal bases yellow, wings hyaline, veins brown. Metasoma rufus except for dorsal margin of T2+3 and exposed dorsal margins of T4–T7 black. Head slightly wider than mesosoma; malar space 0.73 of eye height; posteroventral margin of gena with short, weak carina; frontal ridge absent; LOL = 0.8D, POL = 1.7D, OOL = 2.0D; antenna with 15 antennomeres, 3.88 mm long; A1–A15 (mm): 0.42, 0.21, 0.49, 0.31, 0.33, 0.39, 0.27, 0.25, 0.20, 0.20, 0.20, 0.17, 0.17, 0.17, 0.20. Mesoscutum (Fig. 3) with weak transverse rugulae; notauli percurrent, grooves shining smooth, not interrupted by transverse rugulae, distinctly widened posteriorly; median groove, lateral lines absent; anterior lines slightly convex, extending about one third of mesoscutum. Mesoscutellum (Fig. 3) weakly rugose, median longitudinal depression and posterior upturned carina well developed; fovea well developed, distinctly closed posteriorly. Mesopleuron (Fig. 7) acuminate above, weakly striate below. Metanotal medial fovea without longitudinal carina. Propodeum ruglose; supracox-

al carina strong; propodeal carinae strong, not thickened, finely coriaceous. Metasoma (Fig. 11) longer than head plus mesosoma; T2+3 covering about three fourths of metasoma, weakly excavated along posterodorsal margin, posterior third glabrous. Forewing (Fig. 21) 5.25 mm long; radial cell length 3.0 times width; Rs2 weakly but distinctly bent near wing margin; areolet absent; hind wing (Fig. 18) 3.6 mm long. Tarsal claw with a distinct tooth.

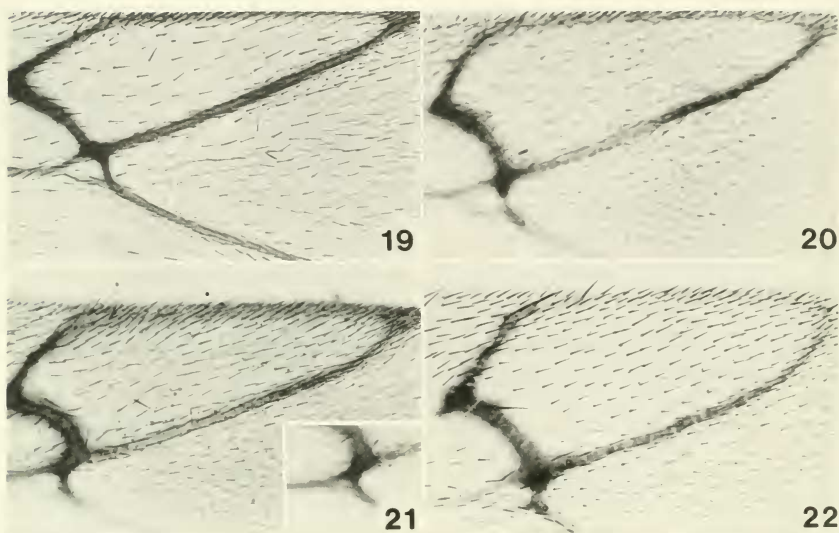
Male (allotype).—Differs from holotype as follows: length 4.25 mm; malar space 0.53 of eye height; antenna 3.41 mm long; A1–A15 (mm): 0.32, 0.17, 0.42, 0.25, 0.25, 0.25, 0.23, 0.22, 0.21, 0.21, 0.19, 0.17, 0.16, 0.15, 0.21; A3 (Fig. 15) slightly notched and bent, elongate beyond notch; anterior lines more distinct; median groove reduced to notch between raised ental margins of notauli; mesopleuron evenly, finely striate; supracoxal carina weaker; propodeal carinae not as strong; T2+3 covering entire metasoma, dorsal black area larger, yellowish ventrally; radial cell length about 2.7 times width.

Variation.—*Female*: Length 4.75–6.7 mm, average of 50 specimens = 5.8 mm; head sometimes amber; areolet absent or elongate, posterior margin very weak (both sexes); metasoma from rufus to dark rufus, dorsal black area sometimes expanded ventrally.

Male: Length 3.5–4.5 mm, average of 34 specimens = 4.2 mm; coloration similar to female except metasoma ventrally dark rufus to dark amber, dorsal black area sometimes expanded.

Type material.—Holotype, ♀, Huehuetenango 3S, Guate., 7300', ⊕ 12.22.35, *Q. pilicaulis*, Kinsey coll., ex gall of *ruginos.*,

Figs. 9–18. 9–12, Metasoma of *Synergus* spp., lateral view. Scale bar = 1.0 mm. 9, *Synergus cultratus*. 10, *Synergus filicornis*. 11, *Synergus kinseyi*. 12, *Synergus mesoamericanus*. 13–16, Male antennomere 3 (A3) of *Synergus* spp., lateral view. Scale bar = 0.1 mm. 13, *Synergus cultratus*. 14, *Synergus filicornis*. 15, *Synergus kinseyi*. 16, *Synergus mesoamericanus*. 17, 18, Hind wings of *Synergus* spp. Scale bar = 1.0 mm. 17, *Synergus cultratus*. 18, *Synergus kinseyi*.



Figs. 19–22. Forewings (radial cell) of *Synergus* spp. 19, *Synergus cultratus*. 20, *Synergus filicornis*. 21, *Synergus kinseyi* (inset shows variant without areolet). 22, *Synergus mesoamericanus*.

Kinsey det. Allotype, ♂, with same data as holotype. Paratypes (86 ♀, 34 ♂: AMNH): 36 ♀, 12 ♂ with same data as holotype; 45 ♀, 22 ♂, Sacapulus 9S, Guate., 6000', ⊕ 12.28.35, inq. spr. '37, ex gall of *brelandi*; 5 ♀, (Label lost), Guatemala, 12.36, fall '36, ex gall of *peredurus*. Excluded from type series: 133 specimens from above localities, ⊕ 12.22–28.35, inq. fall '36–spr. '37; in various but poor condition; tentatively identified as *S. kinseyi*.

Etymology.—This species is named for Dr. A. C. Kinsey to commemorate his contribution to our knowledge of the Cynipidae.

Diagnosis.—*Synergus kinseyi* is easily distinguished from other Guatemalan species by the following characters: areolet absent or elongate with the posterior margin very weak; mesopleuron entirely black; female antenna with 15 antennomeres. This species is also very large, exceeded only by *S. cultratus* in size.

Remarks.—*Synergus kinseyi* has been reared from three hosts and appears to be restricted to woody stem galls, two of which (*brelandi* and *ruginos.*) are the same as those for *S. cultratus* (see remarks for *S. cultratus* for problems in identifying the hosts). The third recorded host, *Andricus peredurus* Kinsey, produces a hard polythalamous stem gall. The presence of *A. peredurus* in Guatemala is a major range extension, as this species previously known only from San Louis Potosi, Mexico (Kinsey, 1920).

There is a contradiction in the labelling of the five specimens reared from the galls of *A. peredurus*, in that the label shows them being collected in December of 1936 and emerging in the fall of 1936. It is known that Kinsey collected in Guatemala during 1935 (Kinsey, 1936). Therefore, it is probable that these insects were collected in 1935 and emerged in the fall of 1936. This agrees with the dates of some of the specimens excluded from the type series. Less is known

about the life cycle of this species than for other Guatemalan *Synergus* spp., as only one series has emergence dates. These data indicate that *S. kinseyi* has a one to two year life cycle.

Synergus mesoamericanus
Ritchie and Shorthouse,
 NEW SPECIES
 Figs. 4, 8, 12, 16, 22

Female (holotype).—Length 3.4 mm. Coloration similar to *S. kinseyi*. Head slightly wider than mesosoma; malar space 0.57 of eye height; posteroventral margin of gena with moderately long carina; frontal ridge absent; LOL = 0.9D, POL = 1.7D, OOL = 2.3D; antenna with 14 antennomeres, 2.75 mm long; A1–A14 (mm): 0.29, 0.12, 0.29, 0.19, 0.21, 0.21, 0.21, 0.19, 0.17, 0.17, 0.17, 0.15, 0.15, 0.23. Mesoscutum (Fig. 4) with strong transverse rugulae (stronger than in other species); notauli strong, percurrent, bottom of grooves smooth, not interrupted by transverse rugae; median groove, lateral lines absent; anterior lines convergent, extending about one third of mesoscutum. Mesoscutellum (Fig. 4) strongly rugulose, posterior of disc depressed, posterior upturned carina moderately developed; fovea large, deep anteriorly, open posteriorly. Mesopleuron (Fig. 8) entirely striate, striations stronger ventrally. Metanotal median fovea without longitudinal carina. Propodeum with supracoxal carina weak ventrally, stronger dorsally; propodeal carinae moderately strong, not thick, finely coriaceous. Metasoma (Fig. 12) longer than head plus mesosoma; T2+3 covering about three fourths of metasoma, weakly excavated along posterodorsal margin, posterior third smooth. Forewing (Fig. 22), 3.8 mm long; radial cell length 2.0 times width, Rs1 very weak along anterior margin of wing (distinct in other species); Rs2 strongly bent near wing margin; areolet normal; hind wing 2.4 mm long. Tarsal claw with a distinct tooth.

Male (allotype).—Differs from holotype

as follows: length 3.7 mm; antenna 3.05 mm long, with 15 antennomeres, A1–A15 (mm): 0.33, 0.15, 0.35, 0.21, 0.21, 0.21, 0.21, 0.21, 0.21, 0.17, 0.17, 0.17, 0.15, 0.15, 0.17; A3 (Fig. 16) notched and bent, not elongate after notch; upturned carina on posterior margin of scutellum not as strong; T2+3 covering entire metasoma, black dorsally, dark rufus ventrally; forewing 3.8 mm long, hind wing 2.5 mm long; radial cell length 2.4 times width.

Variation.—Female length 3.1–4.0 mm, average of 5 specimens = 3.7 mm; male length 2.75–3.7 mm, average of 2 specimens 3.2 mm; head from yellow to amber; mesoscutum and mesoscutellum from black to dark rufus; mesoscutellum sometimes with fovea partly closed posteriorly, a weak median depression, and posterior upturned carina stronger; radial cell sometimes more elongate with Rs2 less strongly bent, anterior margin sometimes indistinctly closed.

Type Material.—Holotype, ♀, Sacapulus 9S, Guate., 6000', ⊕ 12.28.35, inq. spr. '37, *Q. pilicaulis*, Kinsey coll., ex gall of *brelandi*, Kinsey det. Allotype, ♂, with same data as holotype. Paratypes: 14 ♀, 4 ♂ with same data as holotype (AMNH). *Excluded from type series*: 3 specimens from type locality in various but poor condition; tentatively identified as *S. mesoamericanus*.

Etymology.—The specific name means "middle America" and refers to this species distribution.

Diagnosis.—*Synergus mesoamericanus* can be distinguished from all other Guatemalan species by the following characters: female antenna with 14 antennomeres, A3 1.5 times length of A4; radial cell length 2.0 times width, Rs2 distinctly bent; female metasoma rufus below, male metasoma entirely black. The radial cell appears to be open in many specimens as Rs1 is often very weak along the anterior margin of the wing (Fig. 22).

Remarks.—This species is one of the two smaller species of *Synergus* occurring in Guatemala. All the specimens examined

were reared from galls of "brelandi" and emerged during the second spring after collection.

Andricus guatemalensis (Cameron),
NEW COMBINATION

Cynips guatemalensis Cameron, 1883: 71, gall. TYPE: Holotype, gall (BMNH). Examined.

Andricus? mexicana Bassett, 1890: 78 (gall).

Andricus mexicanus Bassett, Dalla Torre, 1893: 91.

Andricus mexicanus Kinsey, 1920: 308, figs. 25–27 (♀, ♂, gall). **New Synonymy.**

Synergus dorsalis Cameron, 1883: 72 (not Provancher, 1888: 398). (♀, ♂). **New Synonymy.** TYPE: Holotype, ♀ (BMNH). Examined.

Remarks.—Cameron (1883) described the galls of *C. guatemalensis* which were sent to him from Guatemala. Bassett (1890) described the galls of *Andricus? mexicana* from galls collected in Mexico. Neither Cameron nor Bassett described what they thought was the gall inducer, although Cameron (1883) described *Synergus dorsalis*, which he thought was an inquiline in galls of *C. guatemalensis* (see below). Kinsey (1920) was the first to describe the adult gall former, which he obtained by cutting from galls that had been sent to the American Museum of Natural History. Kinsey recognized that the galls he had were the same as those of *C. guatemalensis* Cameron and also those of *Andricus mexicanus* Bassett. However, Kinsey did not believe that names based on only the galls were valid as he described *Andricus mexicanus* as a new species while listing *C. guatemalensis* Cameron 1883 and *Andricus mexicanus* Bassett 1890 as synonyms. Thus, *A. mexicanus* Kinsey is a junior synonym of both *C. guatemalensis* Cameron and *A. mexicanus* Bassett, and a junior homonym of *A. mexicanus* Bassett. A new name for *Andricus mexicanus* Kinsey 1920 would needlessly burden the already confused nomenclature. Both Bassett and

Kinsey were correct to assign the species to *Andricus* and *C. guatemalensis* is hereby transferred to this genus.

The holotype of *S. dorsalis* (in the British Museum (Natural History)) belongs to the genus *Andricus* and is a synonym of *Cynips guatemalensis* Cameron. Although the type of *guatemalensis* is a gall while the type of *dorsalis* Cameron is an insect and it is desirable to base species of Cynipidae on the insect rather than the gall, we retain *guatemalensis* as the valid name in the interest of stability. There are two reasons for doing this. First, the name *guatemalensis* has been associated with a gall-inducing species while *dorsalis* Cameron has been associated with an inquiline species. Second, retention of *guatemalensis* simplifies a problem of secondary homonymy between *S. dorsalis* Cameron 1883 and *S. dorsalis* (Provancher) 1888.

When Weld (1951) transferred *Ceroptres dorsalis* Provancher to *Synergus*, this species became a secondary homonym of *S. dorsalis* Cameron. However, Weld did not rename *S. dorsalis* (Provancher) either because he did not know that it was a homonym, or because he knew that *S. dorsalis* Cameron should not have been placed in *Synergus*. Weld visited the British Museum (Natural History), after which he synonymized *S. filicornis* Cameron and *S. furnessana* Weld (Weld, 1930). It is quite likely that he also examined the type of *S. dorsalis* Cameron as well. A new name for *S. dorsalis* (Provancher) is unnecessary as *S. dorsalis* Cameron is now considered a junior synonym of *Andricus guatemalensis* Cameron and therefore the two species are no longer congeneric.

ACKNOWLEDGMENTS

We thank the following curators for making types and other material available for study: D. Azuma, Philadelphia Academy of Natural Sciences, Philadelphia, Pennsylvania; A. Menke, Systematic Entomology Laboratory, Agricultural Research Service,

USDA, United States National Museum, Washington, D.C.; J. Perron, Laval University, Quebec, Quebec; J. Quinlan, British Museum of Natural History, London, United Kingdom; and R. T. Schuh, American Museum of Natural History, New York, New York. The scanning electron micrographs were taken by Lewis Ling (Carleton University). This research was supported in part by an operating grant from the Natural Sciences and Engineering Research Council of Canada (No. A0230) awarded to J. D. Shorthouse.

LITERATURE CITED

- Bassett, H. 1890. New species of North American Cynipidae. *Trans. Entomol. Soc. Am.* 17: 59-72.
- Cameron, P. 1883. Hymenoptera. *Biologi Centrali-Americana*, vol. 1, 497 pp., 120 Plates.
- Dalla Torre, K. W. 1893. Cynipidae. *Catalogus Hymenopterum* II. 140 pp.
- Dalla Torre, K. W. and J. J. Kieffer. 1910. Cynipidae. *Das Tierreich* 24: 1-891.
- Eady, R. D. and J. Quinlan. 1963. Hymenoptera: Cynipoidea. *Handbooks for the Identification of British Insects*, VIII (1a). Royal Entomological Society, London. 86 pp.
- Kinsey, A. C. 1920. New species and synonymy of American Cynipidae. *Bull. Am. Mus. Nat. Hist.* 42: 293-317.
- . 1930. The gall wasp genus *Cynips*. *Ind. Univ. Studies* 84-86: 1-577.
- . 1936. The origin of the higher categories in *Cynips*. *Indiana Univ. Pubs., Sci. Ser. No. 4*: 1-334.
- Provancher, L. 1888. Additions et Corrections au Volume II de la Faune de la Province de Québec. Hymenoptera. Family VI. Cynipidae, pp. 397-398.
- Ritchie, A. J. and T. M. Peters. 1981. The external morphology of *Diplolepis rosae* (L.). *Ann. Entomol. Soc. Am.* 74: 191-199.
- Shorthouse, J. D. and A. J. Ritchie. 1984. Description and biology of a new species of *Diplolepis* Fourcroy (Hymenoptera: Cynipidae) inducing galls on the stems of *Rosa acicularis*. *Can. Entomol.* 116: 1623-1636.
- Weld, L. H. 1913. A new oak gall from Mexico. *Insector Inscitiae Menstruus* 1: 132-134.
- . 1930. Notes on types (Hymenoptera: Cynipidae). *Proc. Entomol. Soc. Wash.* 32: 137-141.
- . 1951. Cynipoidea. *In* Muesebeck, C. F. W., K. V. Krombein, and H. K. Townes, eds., Hymenoptera of America north of Mexico, United States Department of Agriculture, Monograph 2. 1420 pp.
- . 1952. Cynipoidea. *Ann Arbor, Michigan*. 351 pp.
- . 1957. Cynipid Galls of the Pacific Slope. *Ann Arbor, Michigan*. 80 pp.